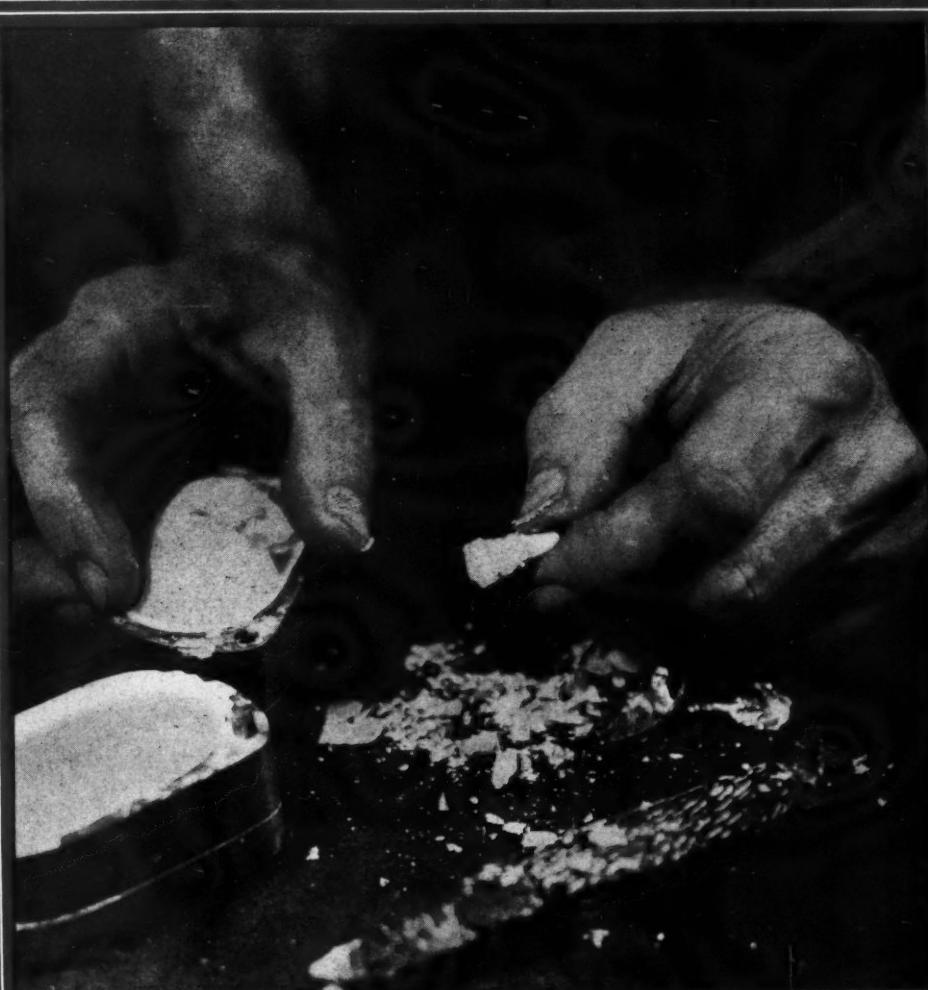


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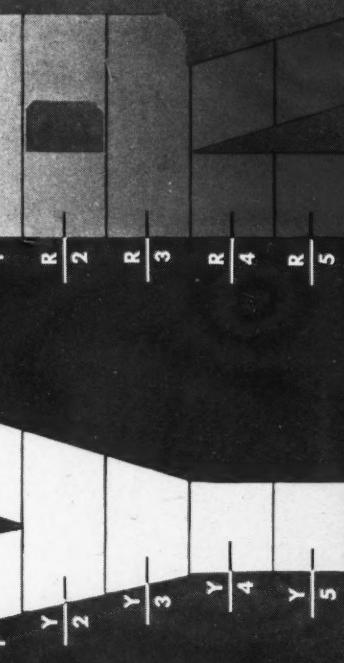


NOVEMBER 1943

BUY  
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BONDS

# A simplified system for matching tooth colors...

"All teeth are basically yellow (pigment) in color. Some are tinged or modified with red (pigment)."



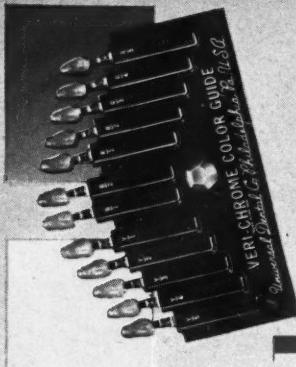
This simplified Veri-chrome system divides the full range of basic colors that appear in human teeth (yellow and red) into five progressive saturations (see chart). The saturations are numbered in order on the Veri-chrome Color Guide. Occasional teeth with blueish cast are classified in Veri-chrome colors as B1 and B2.

*Any human tooth can be accurately matched to one of the colors on the Veri-chrome "Selector" Color Guide.*

The system is extremely simple. If the tooth is dominantly yellow, compare it to Y3. If the natural tooth appears darker

(more saturated), it will match either Y4 or Y5. Should the natural tooth appear lighter (less saturated) than Y3, it will match either Y1 or Y2. The same simple, accurate procedure is used for the "R" (red) series.

Veri-Chrome natural tooth colors have controlled color brilliance.



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FOR EASIER PERCEPTION

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NO. 11

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708 Church Street, Evanston, Illinois

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FRED A. SLACK, Jr., D.D.S. and E. HOWELL SMITH, D.D.S. (University of Pennsylvania, 1932 and 1913 respectively) last month presented an article here on PACKING ACRYLIC DENTURES. In this issue these co-workers discuss the waxing and flasking operations for all-acrylic dentures. Next month Doctor Slack will take up the subject of attachments and reinforcements for acrylic pontics.

**FRED W. ALLEN, D.M.D.** (Harvard University Dental School) has not appeared in

## About Our

## CONTRIBUTORS

these pages since March, 1934, when he described a DESIGN FOR ROUND WIRE CLASPS WITH MAXIMUM FLEXURE AND TORSIONAL ELASTICITY. He returns this month with an idea for constructing acrylic bridges with a view to easy repair.

LEONARD S. FLETCHER, D.D.S. (University of Pittsburgh, 1924) has been publishing

with us since August, 1933, when he wrote an article on IMMEDIATE DENTURES. There followed articles on cast impression trays (August, 1936); individual metal trays (November, 1937); and a technique for full denture construction (January, 1939). In this issue Doctor Fletcher discusses the surgical preparation of the mouth for dentures.

EMMETT BECKLEY, D.D.S., is a graduate of the Kansas City-Western Dental College of the year 1934. Doctor Beckley who specializes in full denture construction was associated for three years with Doctor Ernst Busch whose practice is likewise limited to full denture construction. For the last two years, Doctor Beckley has branched into another field of investigation: the allergic manifestations of the oral cavity.

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# Acrylic Tooth Restorations

CAPTAIN H. A. LICHTENSTEIN, DENTAL CORPS, A.U.S., Camp Davis, North Carolina

## DIGEST

The technique presented here for the construction of acrylic jacket crowns and bridges employs the principles for ceramic crowns in the preparation of the tooth. The presence of a correct shoulder to absorb and distribute stresses is of utmost importance in anterior teeth. The exact steps for the preparation are outlined. For posterior crowns, if a shoulder preparation is feasible, a molar crown may be made in accordance with the technique described. For other cases a taper preparation is permissible.

Hard cast thimbles are necessary in the construction of bridgework.

Color selection, packing, adjusting, curing, removal, polishing, and staining are all considered.

The advantages of the technique are: (1) Crowns will not become loose because of failure of cementing; (2) attrition of cusps has been observed only in rare instances in which, nevertheless, usefulness of the restoration was not affected; (3) long wear of the acrylic crown does not show a change in color.

THE TECHNIQUE presented here for the construction of acrylic jacket crowns and bridges has been in use for five years. The preparation of the tooth follows the principles for ceramic crowns.

## Preparation of the Tooth

The presence of a correct shoulder

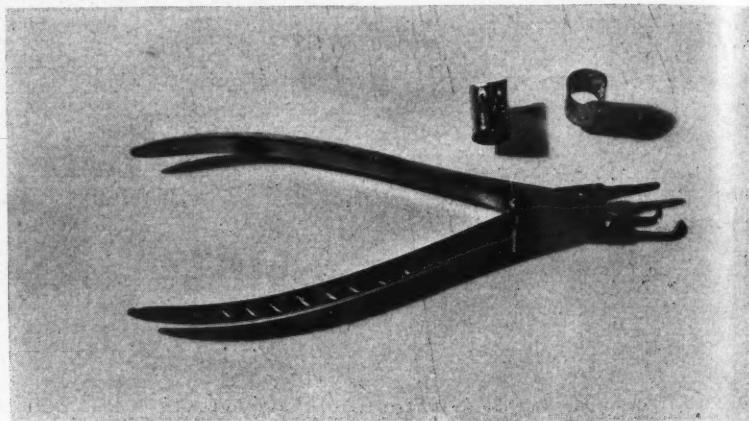


Fig. 1—Pliers for the puncturing of copper bands. Illustrated bands show how burs are raised on the inside. (This, and all succeeding photographs by The Signal Corps, U. S. Army.)

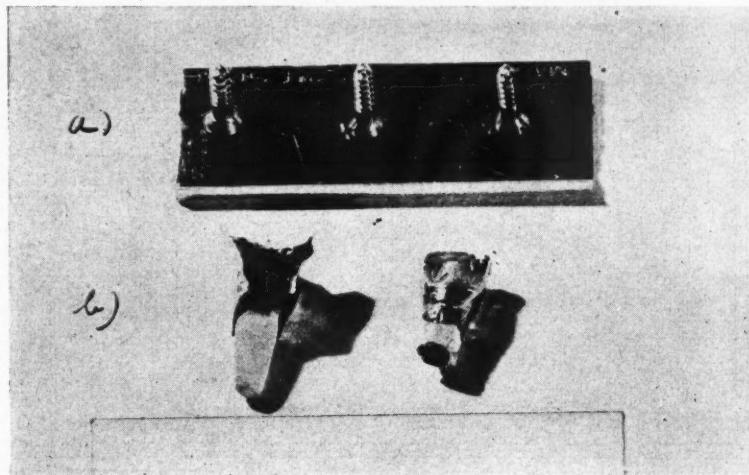


Fig. 2—A, Wood screws mounted on wax strip for reception of waxed crowns. B, Left, Beginning of tin-foiling of carved wax tooth; Right, lingual aspect of foiled wax crown. Base shows head of wood screw embedded in working die.

is of the utmost importance, inasmuch as a shoulder absorbs and distributes stresses placed squarely upon the restoration; whereas in a shoulderless crown, the crown itself must withstand the stresses. This endangers retention in acrylic crowns more than in ceramic crowns.

The preparation of an average incisor need not exceed fifteen minutes. The use of a fine jet of hot water eliminates the need for a local anesthetic in all but exceptional cases.

1. Start the cut both mesially and

distally with a double-sided seven-eighths inch Joe Dandy disc. Carry the cuts slightly below the gingival margin. At the completion of each of these two cuts, rotate the disc slightly at right angles to the handpiece, in order to provide the beginning of a shoulder proximo-labially and proximo-lingually. This also serves as a guide to the amount of enamel to be removed.

2. Remove the incisal edge slightly below the dentino-enamel junction with a fast-cutting, true-running stone,

always with the plentiful use of hot water.

3. Use the same stone to reduce the labial and lingual surfaces of the tooth. Determine the depth of the labial and lingual shoulder by means of a small inverted cone stone. With a large tapering stone, taper the tooth lightly labially and lingually; thus the shoulder will be roughed out in a minimum of time and with little discomfort.

4. Burs, numbers 703, 702, and 701, will serve to cut a clean shoulder all around the tooth.

When burs are used as cutting instruments, the hot water should be applied by continuous use of the spray-bottle rather than the syringe. The fine spray is emitted under greater pressure; débris will be readily dislodged and blown away. The continuous use of the spray will also rid the rotating burs of waste.

5. Trim the completed shoulder with a small-bladed flat chisel, and smooth the dentine with a coarse garnet disc.

6. An instrument such as is shown in Fig. 1 is used to perforate the copper tubes from the outside inward. This procedure raises small burs on the inside of the copper band, thus causing the impression compound to adhere firmly and without distortion to the metal.

7. Pack the die with kryptex model cement in preference to alloy. The former not only sets faster but seems to undergo slight setting shrinkage, producing a jacket with frictional retention. If kryptex is not available, a hard-setting stone, such as Justi die-mac may be used in a fairly thin mix.

8. A wax or plaster impression or a combination of both is taken. The root-end of the die, having first been ground to a taper, is inserted with pressure.

9. Lubricate the die with cocobutter dissolved in carbon tetrachloride, and pour the impression with plaster, not with stone.

10. When the model has been separated, remove the die gently and trim the socket margins approximately one eighth of an inch or more in order not to interfere with the matrix which is now made. Use tin foil, 0.0005 mm.

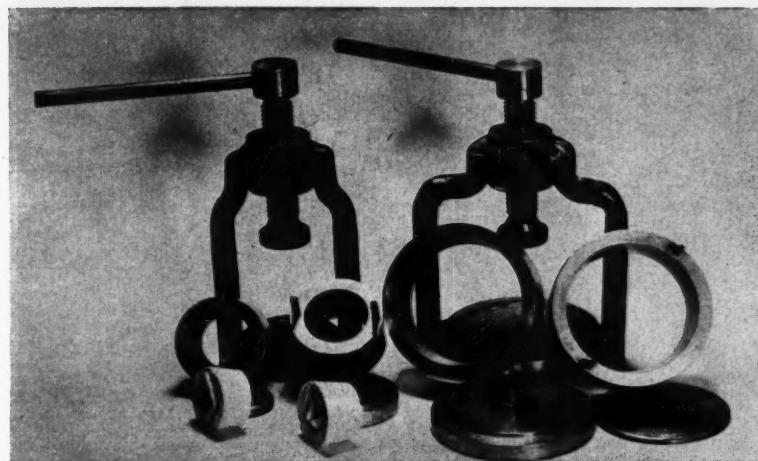


Fig. 3—Precision flasks machined (not cast) are of distinct value in processing acrylics.

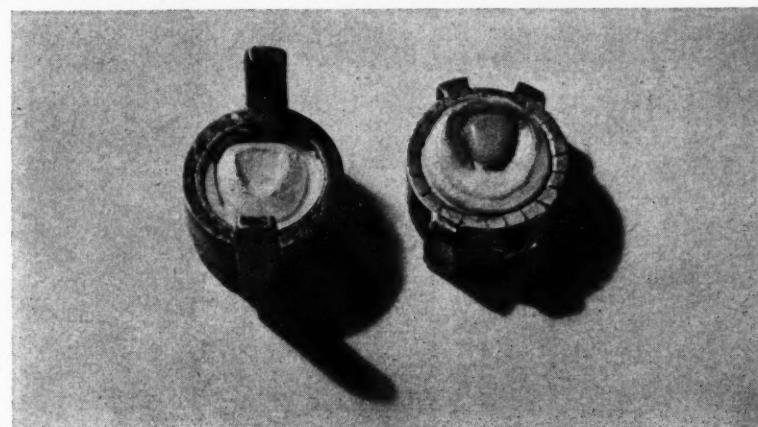


Fig. 4—When cast flasks are used, insertion of shim between flask wall and investment facilitates removal after curing. (Suggested by Major A. Feldman.)

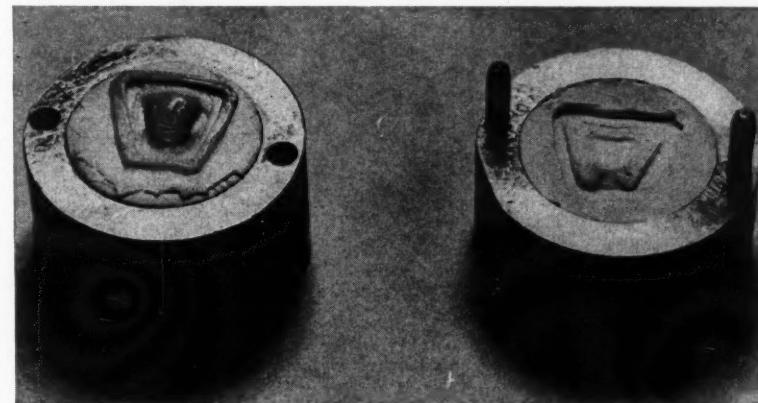


Fig 5—Note color gradation both on cured jacket and in waste groove.

thick. Proceed as for a platinum matrix; provide a tinner's joint and close adaptation. Tin foil will be found to tear more easily than platinum; but after a little practice, one can produce these matrixes quickly enough with-

out tearing. The matrix is delicate and must not be removed from the die during this process. Re-insert the matrix-covered die into its socket.

11. Knead some ordinary pink base wax between the fingers and force the

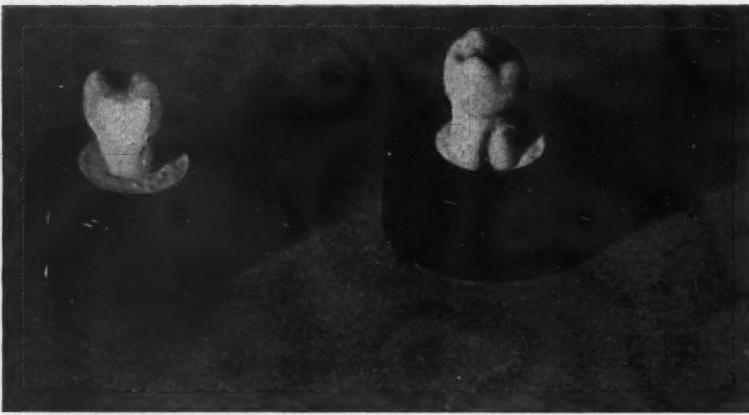


Fig. 6—Right: Finished molar jacket constructed on well defined shoulder. Left: Natural extracted tooth, prepared for jacket. Impression was taken and jacket constructed in usual manner, cemented on tooth and then ground flat on wet stone to show even thickness of crown. Note cement line and marked undercuts. Jacket is resilient and snaps accurately into place.

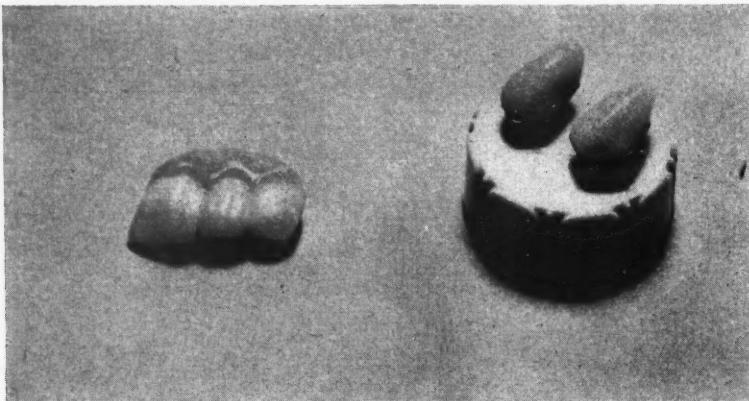


Fig. 7—Left: Continuous gum block in acrylic. Right: Steele's facing and acrylic facing.

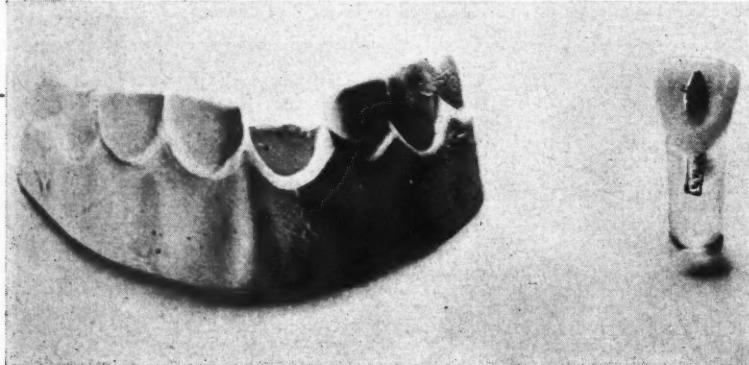


Fig. 8—Anterior specimen crown designed for pulpless central. Crown is provided with beveled or countersunk hole. Wax pattern is made with crown loosely in place. While crown is being cemented and cement is still soft, gold core is inserted.

wax with equal pressure around the matrix. This will tend to swadge the matrix more closely to the die. Burnishing the matrix painstakingly in the first place should nevertheless be done.

12. Carve the wax block to shape.

incorporating anatomic details and using the adjacent teeth as guides.

Removal of the waxed crown will be fairly easy.

13. The working die, as contrasted with the master die, is made next. Press a small brass wood screw into a

strip of carding wax which is mounted in small metal or wood trays taken from stock teeth.

14. Mix a small quantity of plaster and stone in a 50-50 proportion; fill the wax crown; smear some of the mix upon and around the wood screw, and place the crown pattern upon the covered screw. Do not omit the mounting of the screw upon a base.

15. On hardening of the mix, remove the assembly from the wax strip and trim the hardened core.

16. Cover the wax model with number 60 tin foil. Fold a strip of the foil around the mounted wax crown, allowing the foil to extend slightly below the margins of the crown. Fold lightly over the labial surface, but burnish carefully the lingual, incisal, and proximal surfaces. Invest the structure in the lower half of a miniature flask, placing the mounted crown lingual side downward with the incisal edge up at an angle of approximately 40 degrees.

17. When the plaster investment has set, trim the surface until it is smooth, carefully scraping away the plaster from the edges of the tin-foiled crown, so that no frail overhanging edges result on removal of the wax.

18. Open the tin foil, which has been folded lightly over the labial surface of the tooth, and flatten down on the surrounding plaster. Coat the entire surface lightly with cocobutter; place the top half of the flask and make the counter-cast.

19. When the investment has thoroughly set, place in a tea strainer or similar utensil, and immerse in boiling water for 3 seconds. The flask may then be opened with ease. Do not permit the flask to remain in the boiling water longer, because the wax will melt and the mold become discolored.

20. Flush the wax with a punctured ladle until all traces have been removed. A flushing with ether, chloroform, or acetone will remove any wax remnants which may have escaped detection. This final flushing also cools the mold sufficiently for packing.

21. Cut a waste groove around the pattern mold approximately one-fourth inch from the latter and about one-eighth inch deep (Figs. 4 and 5).

22. Color Selection and Packing:

I have found that the following shades, which correspond to the new S. S. White silicate shade guide, provide a sufficient range, in varying combinations, for all practical purposes. They are: 15, 16, 17, 18, 22.

**Color Selection**—Color selection is accomplished as follows: Place a small calling card over the patient's anterior teeth in such a manner that only the gingival third of the tooth is exposed. Compare with a cured sample of the various dentine shades.

Again cover the tooth, this time exposing only the incisal edge. Again note the color. Make a record of the color combinations.

**Packing**—Place a small piece of the mixed dentine shade on the mold and press down with a moistened finger tip. Add a sufficient quantity of the dough to provide a surplus; cover with moistened hydrophilic cellophane, and place in a press. Close gently and gradually until the flask is completely closed.

**23. Trimming**—On complete closure of the flask, immerse in boiling water for 1 or 2 minutes. Remove, open the press and separate the flask halves. Trim a small amount of the toughened acrylic from the incisal edge and some of the upper labial third of the tooth. Do not cut away from the gingival third. Remove the surplus acrylic, but only from the incisal edge outward to the flask edge. The purpose of this step is to allow the enamel shade surplus to escape into the incisal part of the surplus groove, rather than be impressed into the dentine body. A sharp, small, stainless steel blade, which may be heated in a clean burning flame, is used for trimming. Cuticle forceps, as used by manicurists, serve particularly well for the cutting of axial grooves. The amount of trimming is determined by the amount of bluish grey color desired. Experience alone will teach the proper amount to be removed.

**24. Curing**—After the enamel mix has been added, cover with a fresh, moistened piece of cellophane; close the flask in the press completely, and cure by placing in a pan of cold water, allowing the mix to come to a boil; keep boiling for 30 minutes.

**25. Removal**—The case is slowly

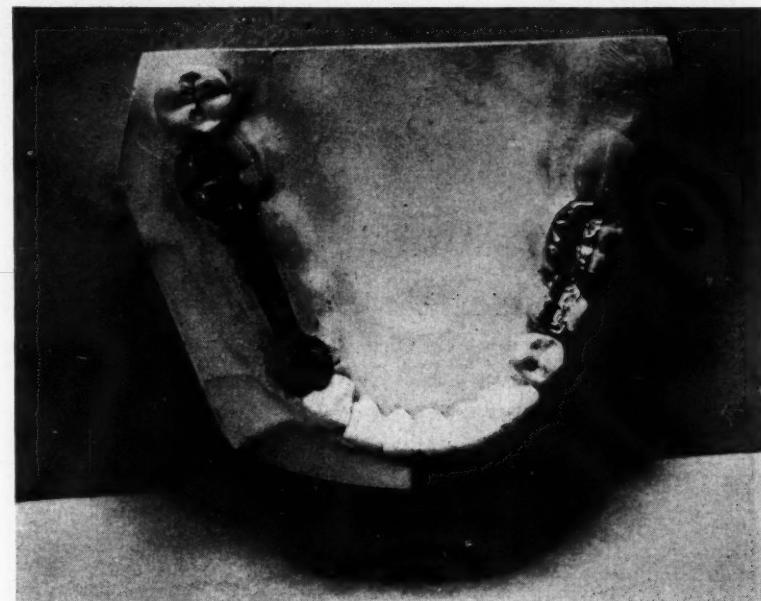


Fig. 9—Left: Waxed molar inlay and bicuspid three-quarter crown connected with parallel bars, to be cast in hard gold. Provides retention for acrylic block between abutments. Right: Bicuspid and molar inlay tacked together with gold solder on occlusal contact ridge, supporting acrylic cantilever, cured upon large cast loop. Shape of molar is modified posteriorly for stress reduction. Valuable to balance against upper partial opposing denture.

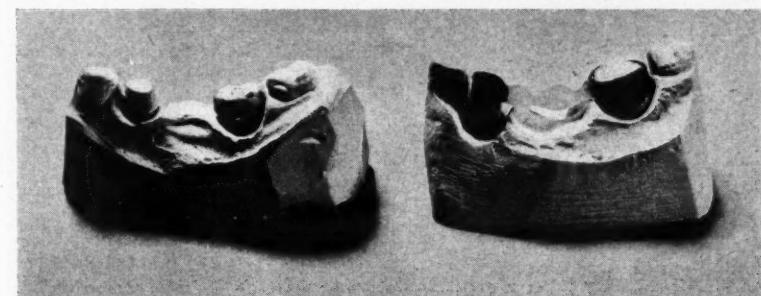


Fig. 10—Left: Plaster model with removable stone dies. Right: This is a different model showing shoulder preparation for cuspid. Note reinforcement bead over mesial, incisal, and distal surfaces. Molar has taper preparation and wax pattern shows reinforcement of crown. Abutments are connected by twisted wax bar.

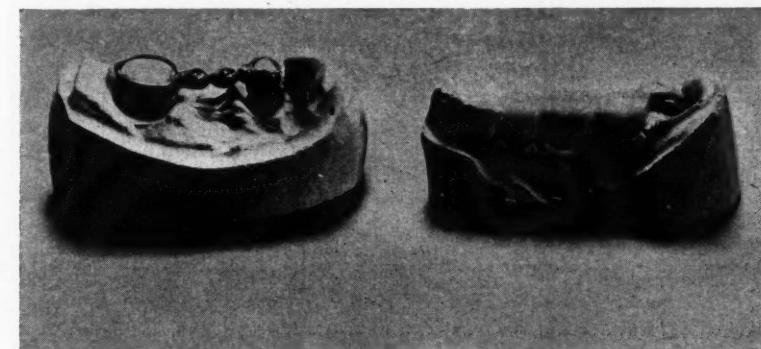


Fig. 11—Left: Pattern cast in saddle and bar gold in one piece. Note reinforcement ribs on crown, carved shoulder, and twisted bar. Right: Finished bridge. Only small amount of gold is visible gingivally. This will be hidden by soft tissue.

cooled, and the tooth is removed and freed from adhering plaster. Grasp the tooth firmly with a towel and for-

cibly remove the screw with a pair of strong, serrated pliers. This will break the core for easier removal.

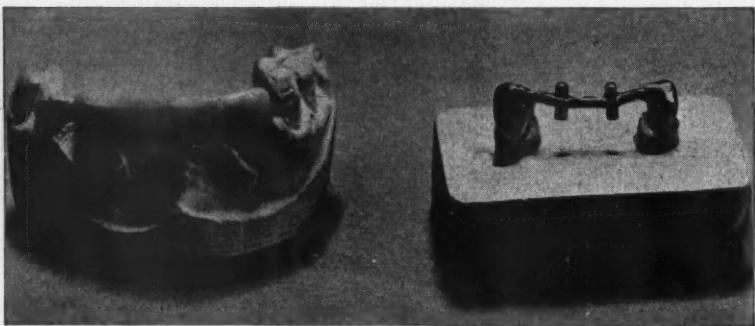


Fig. 12—Left: Finished anterior bridge. Right: Cast skeleton of saddle and bar gold in one piece. Note that thimbles do not reach to shoulder. This is because the crown tapers gingivally and may show thimble shadow despite masking compound.



Fig. 13—This illustration is not intended to show the strength of acrylic because the same test will be endured by a ceramic jacket. The illustration shows the cement bond which has not given way after this crown withstood the test many times during clinical demonstrations. Tip of spike was prepared in the manner of the tooth and provided with a shoulder.

**26. Final Trimming**—Scrape all tin foil from the outside and the inside of the crown and clean repeatedly with a cold water spray. Remove the flask with stones and place the crown on the master die. Here the final trimming is performed with stones, discs, and Burlew discs. Axial grooves may be deepened with a round bur and horizontal grooves commonly found on the gingival third may be accentuated with a small knife-edged stone.

**27. Polishing**—Polish on the master die with a bristle brush and fine pumice, followed by a rag wheel and pumice and a rag wheel with moistened whiting or tin oxide.

**28. Staining**—Whenever staining of acrylic crowns is desired, the waxed crown is carved more deeply on such areas as are to receive stains. The crown is pressed as usual, but opened again after the second pressing. The areas that have been carved more deeply into the wax are reproduced in high relief on the counter-cast. Remove this high relief with a small scraper; add stains and close again with cellophane. One may use either acrylic stains, obtainable on the market, or mix porcelain mineral stains with a little acrylic powder 15 (white) and a drop of monomer.

#### Posterior Crowns

If a shoulder preparation is feasible, a molar crown may be made with assurance of satisfactory results when the technique outlined is followed. For other cases a taper preparation is permissible:

1. Be certain to remove all undercuts and remove a generous amount on all surfaces.

2. Obtain a copper tube impression and a wax bite, taken with a "dicah" impression tray.

3. Make a stone model of the opposing teeth first. Provide a keyed extending surface.

4. On thorough hardening of this model, insert the die into its place.

5. Place the hole of a toothbrush handle over the stump and drive home with a moderately strong hammer blow. This will seat the die, overcoming the contraction of the wax, when the latter hardens. This procedure will do away with the tendency of the

crown to appear raised and will consequently obviate the need for further trimming of the carved and polished crown.

6. Lubricate the keyed extension and complete the model.

7. Use plaster.

8. When separated, remove and clean the die. Also trim the socket down as described previously.

9. Wax on the lubricated master die a wax thimble, using 30 gauge casting wax. The occlusal surface may be left open.

10. Thicken the gingival edge with blue casting wax and carve a shoulder seat into this thickened margin.

11. Featheredge and cast to dimension. The casting may be rough, except for the featheredge, which is to be polished.

#### Bridgework

Hard cast thimbles should always be used in the construction of bridge-work. Because of the resiliency of the acrylic jacket, if carefully processed, stresses and torques will sooner or later destroy the cement bond of the abutments, unless a rigid skeleton is used. Thimbles must be reinforced to resist twisting and stresses. Thimbles must be connected with reinforcing bars. These bars are made for posteriors by twisting a strip of pink base wax in the form of a screw and luting the ends to the abutments high enough to allow for later interstitial spaces and low enough to cover the bar with acrylic material (Fig. 11).

For anterior bridges, employ thimbles, resting on the prepared tooth shoulder (Fig. 12).

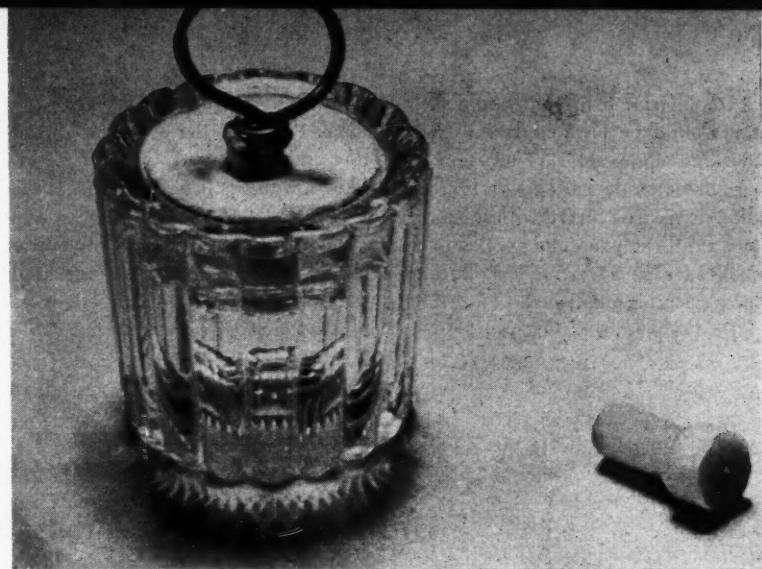


Fig. 14—Left: Master pattern was oiled; inserted in soft stone; then, on hardening was withdrawn. Master pattern may be freely inserted and removed. Right: Master pattern was tin-foiled, flasked, removed; tin foil was left in flask. Pack with acrylic under pressure, cure, and peel off the tin foil.

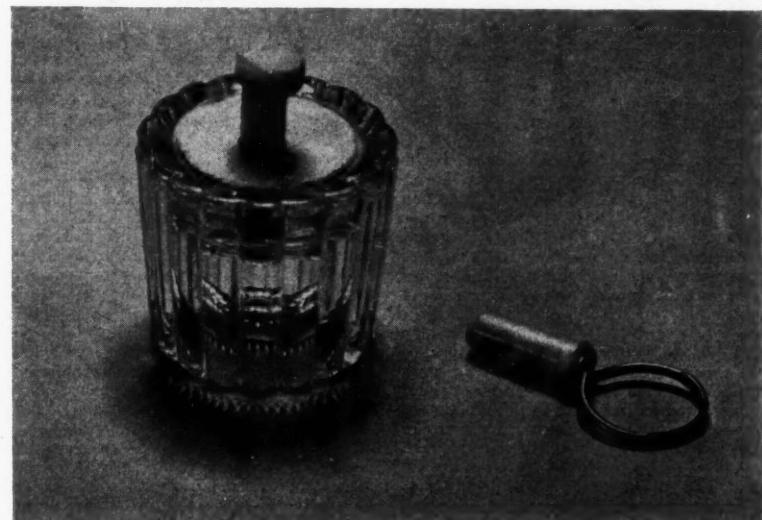


Fig. 15—Acrylic reproduction will not enter hole. Demonstrates that plaster in flask was compressed under applied pressure. Resulting acrylic pattern was consequently enlarged. Restorations may be carved to dimension and need not be oversized, contrary to advice of some manufacturers. Master model at right.

Fig. 16—Patient with six anterior crowns in place. Right: Cast shows marked hypoplastic enamel and caries.



On anterior bridges the gold skeleton should be covered labially with masking compounds. They may be purchased on the market; or, titanium dioxide may be mixed with monomer and a little polymer and applied to the skeleton after investing and flushing have been accomplished.

Bridge pontics are carved between

the waxed and carved abutments, previous to which the areas to be saddled must be slightly scraped to provide for the polishing of the saddle areas.

Be certain to free the interstitial space, in order not to impinge upon the tissue of the abutment teeth, mesially and distally respectively.

### Reinforced Anteriors

In my opinion, the use of gold thimbles underlying the acrylic structure of single anteriors should be confined to badly destroyed stumps. The acrylic jacket, if carefully processed, will not "pop off."

Station Hospital, Camp Davis.

## Sudden Death and Anesthesia— Fundamentals of Anesthesia

[From Queries and Minor Notes, J. A. M. A. 122:1215 (August 21) 1943.]

"A white woman, aged 21, whose weight was 110 pounds (50 Kg.), requested a tonsillectomy. Her past history was negative except that she had always been nervous. Preoperatively, her heart, lungs, blood pressure and urinalysis were normal. The patient was given morphine sulfate  $\frac{1}{2}$  grain (0.008 Gm.) and atropine sulfate 1/200 grain (0.00032 Gm.) one-half hour before operation. Induction of anesthesia was begun with approximately 50 drops of chloroform and was continued with ether. No further chloroform was used. The operation was slightly prolonged. The anesthesia was rather light, the pupils being moderately constricted and there being some motion of the eyeballs most of the time. In fact, I found it difficult to maintain sufficient depth with ether vapor administered through an ether tube attached to a suction machine and had to supplement this, because of movement of the patient's limbs, with drop ether on three different occasions. Ether was omitted entirely during the last fifteen minutes because of faulty respirations and pallor. The pupils did not dilate. During the last fifteen minutes of the operation the patient stopped breathing momentarily and respirations were easily started by the simple procedure of pressure on the sternum. Immediately on removal of the mouth gag and completion of the operation, the respirations were Cheyne-Stokes in type. They persisted thus until death by respiratory failure one and one-quarter hours after completion of the operation. The pupils were dilated between 2.5 and 3 mm. They dilated widely with the apneic phase and contracted with the hyperpneic phase. The heart action was good until the last. Nikethamide, caffeine and epinephrine were given with temporary benefit but without interrupting the periodic character of the respirations. Is it likely that I am right in assuming that death was due to morphine idiosyncrasy? Could death, under similar circumstances, be caused by acapnia resulting from partial and intermittent anesthesia and holding the breath during induction? Could the chloroform have influenced the result? In this case would atropine, in the dose given, decrease or augment the respiratory depression? Can any reliance be placed on pupil signs with the use of morphine and atropine or either drug alone? Should morphine be condemned as preoperative medication? I do not consider this an ether death because the respirations did not stop but became peri-

odic, the patient lived one and one-quarter hours after stoppage of ether, and the narcosis, instead of becoming lighter with elimination of the ether, became deeper and more profound. Does the literature record many deaths during ether induction from acapnia? Can ether narcosis produce Cheyne-Stokes respirations? Have any similar accidents been recorded? Is it likely that the use of carbon dioxide-oxygen mixture (not available at the time) would have made any difference in the outcome? Is lobeline a more powerful respiratory stimulant than nikethamide? Sollmann states in his textbook of pharmacology that it is dangerous to give an anesthetic to a crying child because of the possibility of producing acapnia. Has clinical experience borne this out? Is it advisable to give preoperative medication before tonsillectomy to infants and small children? Which is the safest sedative for preoperative use, morphine or one of the barbiturates? Is carbon dioxide administration effective in overcoming acapnia?

"ANSWER.—Explanation of the sudden death of a healthy person is not always possible. The excitement attendant on such an occurrence often prevents accurate recording of events and their sequence. The fact that thorough postmortem examinations has failed on many occasions to furnish proof of the cause of death is well recognized. Before attempting to answer the fourteen questions included in this communication, it may be profitable to offer some general comment on anesthetic problems.

"Incidental interference with the normal physiologic functions accompanying the state of anesthesia are the usual causes of morbidity and mortality rather than specific effects of particular drugs. In other words, failure adequately to protect the functions of respiration and circulation during anesthetic depression is of vastly greater importance than is the choice of the drugs used or the doses administered. In this case no mention is made as to whether the anesthetist was able to maintain completely free and unobstructed breathing throughout the operation. Not infrequently, respiratory obstruction is present during a tonsillectomy under general anesthesia unless an artificial airway is placed in the trachea. Even with minimal bleeding during such an operation, blood and mucus may pass through the trachea into the lungs and interfere seriously with the exchange of oxygen and carbon

dioxide between alveoli and the blood. On the basis of the information given, the most likely explanation of this accident would seem to be respiratory obstruction. In some patients the anatomic relation of the structures of the pharynx when the mouth is held wide open results in partial obstruction of the larynx. Inadequate depression of the reflexes in the throat may result in partial adhesion of the vocal cords, thus contributing a considerable degree of obstruction to breathing. Clotted blood or pharyngeal secretion in the air passages in the lungs may prevent either partly or completely the exchange of atmosphere in a lobe, a lobe or even a whole lung beyond the obstruction. Any of these accidents may be superimposed on what would otherwise be an insignificant depression of respiratory exchange due to the central action of sedative drugs or of general anesthetic agents. Granted that such partial respiratory obstruction did persist during this operation, the cells of the centers governing respiration would suffer from lack of oxygen and from acidosis caused by accumulated carbon dioxide. The physiologic mechanism for the maintenance of normal breathing is dependent on these two factors, the tension of oxygen and of carbon dioxide. The possibility of such disturbances resulting in serious harm or even in death is appreciated by the experienced anesthetist.

"1. The effective dose of morphine varies with individuals. Rarely is an eighth of a grain found to cause alarming symptoms even in a 5 year old child.

"2. Acapnia or depletion of carbon dioxide can cause death only through the failure of breathing. Artificial respiration is the remedy. The opposite condition, sometimes called hypercapnia, is much more likely during general anesthesia.

"3. Death during the administration of chloroform is possible but not under the circumstances described.

"4. Atropine in usual doses is not a likely cause of respiratory depression. It increases the rate of breathing and decreases the depth. It tends slightly to decrease the respiratory depression from morphine for this reason.

"5. Whether morphine is used to advantage before inhalation anesthesia depends on the time interval, on the dosage and on recognition by the anesthetist of its pharmacologic effects. It may accomplish tranquillity and allay fear. It carries the patient

(Continued on page 514)

# Waxing and Flasking of All-Acrylic Dentures

FRED A. SLACK, JR., D.D.S. and E. HOWELL SMITH, D.D.S., Philadelphia

## DIGEST

1. A fully polymerized plastic tooth plus a polymerizing denture base plus heat and pressure give a homogeneous methacrylate structure.

2. Plastic teeth plus good processing will result in a good all-plastic denture.

3. No flaming or wax solvents should be used in wax-ups. Polish before processing ground teeth.

4. A hard model plus a strong investment plus a stone index plus a strong investment will insure a dense case without raised bites or irregular teeth.

5. A wax-free model plus a wax-free index without the use of solvents will give a clean separation.

6. A slow, wet rag wheel with pumice plus a slow, dry rag wheel will require a minimum finishing time.

WHEN ACRYLIC teeth are processed in acrylic dentures, some minor changes in technique are necessary. Here we have one completely polymerized object in the form of a tooth being made a part of a homogeneous structure with another object in the form of the denture base in a state of polymerization. This involves complication of stress and strain relationship. It may be compared to the irresistible force against the immovable body. In this case the immovable acrylic tooth is acted upon by the irresistible force of polymerization contraction. As in all such cases a compromise is effected and in this instance, the compromise is small enough to be compensated for and tolerated by mouth tissue. In porce-

lain teeth a compromise is effected by the occasional checking of the tooth and a strain of the surrounding acrylic denture material.

Acrylic teeth are pressed from pigmented powder. The temperatures and pressures involved are sufficient to give a stable end-result so far as all physical change is concerned. As in the manufacture of porcelain teeth, however, inspection does not always reveal certain flaws, which are bound to be present in any mass production of molded objects. Processing precautions can minimize any existing but invisible flaws in the teeth. Acrylic processing against a defective porcelain tooth may result in checking or actual fracture. Processing against a defective acrylic tooth will often result in the complete elimination of the defect.

Contraindicated procedures of processing may even check otherwise good porcelain teeth and likewise may result in weakening an acrylic tooth.

## Waxing

The first step in the making of a fine denture is waxing. It is possible by careful waxing to keep the wax from the exposed surfaces of the acrylic teeth. If wax should accidentally get on the teeth, it is a simple matter to remove before investing. With the use of a black bristle brush wheel on a slow revolving lathe, the wax comes off the teeth readily. If wax is allowed to remain, the investment then engages little channels of wax on the teeth, which are later filled with denture material. The denture material molecularly joins with the tooth and must be removed with a bur or stone, necessitating subsequent polishing of the acrylic tooth. The waxed gingival margins should be sharp and distinct, and overemphasized rather than underemphasized. All wax should be polished smooth

with an ordinary toothbrush or with a finger and turkish towel. Frequently a case is deflasked and buffing is all that is required for complete finishing. This is due to a smooth, polished wax-up.

## Wax Precautions

Under no circumstances should a wax solvent be applied for the purpose of smoothing a wax or for any other reason; likewise, no flame should be applied to the wax which can possibly come into contact with or cause a heating of the acrylic teeth. Should it be necessary to grind the acrylic teeth to occlusion, these surfaces should be buffed smooth before processing. This is similar to the glazing of the porcelain tooth after it has been ground, although in the present instance the buffing of an acrylic tooth presents no problem; whereas in porcelain, the involved procedures made neglect a routine practice.

## Flasking the First Half

The waxed denture is complete in its carved state and is to be invested in the first half of the flask. Only routine procedure is involved here, although it is recommended that a strong plaster, or one that is reinforced with one in three of stone, be used for this purpose. Contrary to common belief, ordinary flasking gypsum plaster has not the compression strength to withstand the pressures involved in processing and polymerization. It is this actual give or displacement of soft plaster which has resulted in many raised bites and apparently warped cases.

## Flasking the Second Half

When the first half has sufficiently hardened, a good strong index of stone is painted over the acrylic teeth and also over the wax. This should be approximately three eighth of an

inch thick. This will prevent all movement of teeth, displacement of material resulting in a raised bite, and also will give a hard surface against which to process. After the index is stiff enough so as not to be displaced, the second half of the flask is placed, and a hard plaster is poured around the index. This plaster may also be fortified with a portion of stone.

The lid is placed on the flask and it is placed in a press with only finger pressure applied to the handle. This pressure is important from the standpoint of having the metal parts of the assembled flask in contact, not relying on the contact of the investments to take the entire compression load. This procedure will also decrease the number of checked porcelain teeth.

#### Boiling Out the Wax

When the two halves of the flasked investment are completely hard, they may be placed in boiling water for approximately 3 minutes. It may be pointed out that setting of the investments does not necessarily mean a hardening of the investments. Remove the flask from the boiling water at the end of 3 minutes and carefully open the two halves. The wax at this stage should be soft, not liquid. In this softened state, the wax may then be peeled from the investment and the teeth; a clean surface will be had. Flushing with boiling water is indicated to remove remaining particles of wax which may have clung to irregular surfaces. This procedure serves a twofold purpose: (1) It keeps the boiling water free of excess wax; (2) it prevents molten wax from being impregnated in the investment surfaces.

It is emphasized that no wax solvents, such as acetone, chloroform,

carbon tetrachloride, or other solvents, should be added at this time, as they are contraindicated from the standpoint of contact with acrylic teeth and are deleterious to future processing. If some of the wax should remain and flushing does not remove it, Borax and soap added to the water will accomplish the desired result. This, combined with the brushing action of a large paint brush against the clinging wax, will remedy the situation.

When the wax has been entirely removed, the flask is allowed to cool sufficiently for the succeeding procedures.

#### Use of Foil Substitutes

At the present time, it is necessary to conserve all tin foil possible, but foil substitutes are available. Some of these substitutes will make a return to foil unlikely. One substitute in particular has the peculiar property of forming a film only on investment surfaces, thus obviating the risk of a separation between teeth and denture material, bar and denture material, or repaired surfaces of acrylic. The separator is applied to the investment surface after wax elimination, and after all steaming of the flask has been finished. It is applied with a good size brush to the hot investment surfaces in excess, and after 20 or 30 seconds the excess is shaken out; the flask is then tilted so that it will drain dry, and the film is allowed to form, which occurs in about 5 minutes.

On the model side, foil is recommended, although cellophane or separator may be used there also after total familiarity with the product is attained. Foiling of the model is no problem and it is felt that this procedure is best. If, however, it is desired to use a film on the model side,

the separator should be applied to the hot model after test-packing has been completed.

#### Packing, Processing, Finishing

There is no departure from routine in packing and processing an all-acrylic denture. Any good acrylic technique will suffice, although it is recommended that a slow build-up of temperature be followed and that a grade of denture material be used which is certified by complying with American Dental Association specifications:

158° F. for 1 hour: Boil  $\frac{1}{2}$  hour; bench cool.

180° F. for 3 hours: or bench cool.  
From 100° F. to 212° F. for 1 hour:  
Boil  $\frac{1}{2}$  hour; bench cool.

After processing has been completed and the case has cooled and been opened, little should be necessary for completion. All flash should be removed. The periphery should be trimmed to the muscle attachments and any necessary carving stoned in with a good, coarse, carborundum wheel revolving slowly. Any index remaining around the gingival of the teeth should be removed with a sharp-pointed instrument. Small stones or burs may be used to finish the gingival region. There should be no pink denture material on the teeth. After cleaning has been accomplished, polish by using slow, wet rag wheels and pumice, and buff by using a slow, dry rag wheel. Smaller, similar wheels used on the mandrel may be necessary in deep gingival areas. By placing the thumbnails or fingernails over the teeth, it is possible to protect them from the rag wheels. A slow, wet rag wheel with pumice plus a slow, dry rag wheel will require a minimum of finishing time.

32nd and Spring Garden Streets.  
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#### Unsolicited Manuscripts Are Welcome

"When you have made an observation of value or reached a conclusion concerning the unusual, publish it. Avoid carrying unpublished knowledge to the grave!"—  
Sir William Osler.

# Constructing Acrylic Bridges for Easy Repair

FRED W. ALLEN, D.M.D., Boston

## DIGEST

An idea is suggested whereby acrylic bridges may be constructed in such a manner as to simplify repair. Individual metal bases are made for the acrylic pontics.

THE WARNING has been made never to use acrylic for the occlusal surface of pontics in bridges; nevertheless, for esthetic reasons, acrylic has its place as well as porcelain. The caution that consideration should be given to repair and maintenance in the construction of bridges is likewise familiar.

## Technique

The following idea of individual bases for acrylic pontics is adapted from a technique used in anterior porcelain bridges:

1. The area on the model between abutments is covered with 20 gauge wax, and a layer of thin tin foil is placed over that. This thickness of wax is sufficient when a saddle pontic is used; but more space must be provided for a convex pointed pontic.

2. Any tapered instrument, such as a ball straight burnisher, sufficiently small, may be used as a mandrel for molding the bases, for any of the ten anterior teeth; a large size is necessary for molars.

3. After the size of the base desired has been determined, the mandrel is lubricated and a piece of 30 gauge wax, about half an inch wide, is wrapped around it once at that point; the surplus is cut off and the edges are joined to form a tube. Slip the tube



Fig. 1—Ball burnisher used as mandrel upon which wax is molded to form the base for a casting. Casting so formed acts as individual metal base for an acrylic pontic.

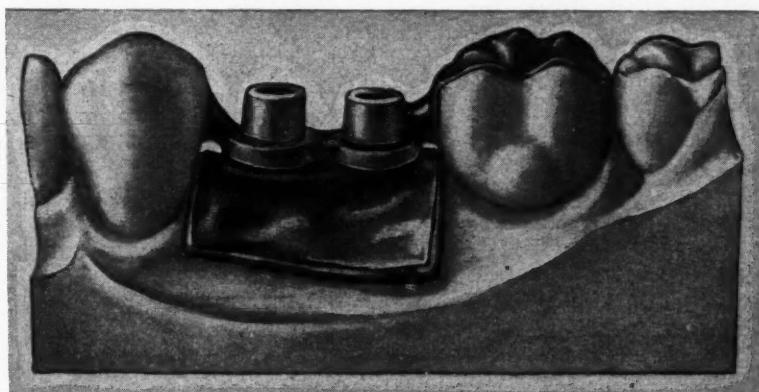


Fig. 2—Individual metal bases upon which acrylic pontics are constructed.

off and on the mandrel a couple of times to be sure that it does not stick.

4. A piece of 20 gauge wax is cut twice as wide as thick, wound around the base of the tube, and attached with a warmed wax instrument.

5. The tube is slipped from the mandrel and the base carved labiolingually to fit the curve of the saddle area: the tubes are slightly pinched to make them oval for bicuspids.

6. If two or more pontics are to be supplied, tubes for each pontic are made in the same manner, fitted to the model, and stuck together.

7. The excess length of the tubes, left on until now for easy handling, is cut off to proper occlusal height.

8. The tubes are invested and cast with suitable gold, but no finishing is done except to cut off the sprue.

9. The casting is returned to the model, attached to the abutments, removed, invested, and soldered.

10. From this point on the regular laboratory procedure of waxing and processing the acrylic is followed. The end-result is an individual metal base for each pontic, which resists strain from every direction, but which, if fractured, may be trimmed to the form of a jacket base; a new acrylic jacket may be made without removing the bridge.

520 Beacon Street.

## If Your DENTAL DIGEST Is Late

IN WARTIME, magazine mail is delayed because the postal service is overburdened. We mail THE DENTAL DIGEST each month on its scheduled mailing date—the fifteenth of the month of issue. But it is impossible to control the date of delivery to readers. Please be patient if your DENTAL DIGEST is late.

# Surgical Preparation of the Mouth for Dentures

LEONARD S. FLETCHER, D.D.S., Castle Shannon, Pennsylvania

## DIGEST

In the surgical preparation of the mouth for the insertion of dentures, the use of the radio knife is preferred to the scalpel.

This article deals principally with (1) the elimination of high and low muscle attachments; (2) the elimination of the labial or lingual frenum; (3) the reduction of irregular tuberosities; (4) the removal of soft flabby ridges.

### Technical Summary:

1. A strip of iodoform gauze dipped in compound tincture of benzoin can be used for hypersensitive patients. This is placed in the denture over the crest of the ridge.

2. For the average case, benzocaine paste smeared on the inner surface of the denture, which covers the incised tissue, will eliminate most pain.

3. Foille emulsion seems to stimulate granulation and at the same time prevents excessive granulation; it facilitates epithelialization and keeps scar tissue soft. Foille is also a good sedative dressing. It is my choice among anodynes and germicides.

4. Cutting or coagulating should not be done through the periosteum at any time except when the process directly underneath the incision is to be removed.

5. Pressure must be kept over the crest of the ridge where the flabby hypertrophied tissue was removed.

6. When there has been continued irritation under a lower denture, owing to sharp spicules of bone on the crest of the mandible, the periosteum is usually completely detached.

IF AN EDENTULOUS patient requires surgery before the insertion of dentures, photographs should be made of the case before and after operating.

It is preferable that surgery be done with the radio knife. Its advantages over scalpel are: (1) Destruction of the diseased area is accomplished *in situ*; (2) there is less manipulation of tissue; (3) complete sterilization is assured; (4) a bloodless operating area is had; (5) time is saved in wiping or aspirating; (6) rapid healing, little pain, soft scar healing result; (7) greater operating speed is possible; (8) there is less excessive granula-

tion of tissue, which is especially advantageous when removing hypertrophied tissue from flabby ridges.

## Technique

1. A local anesthetic is used in all cases by injecting the solution about one-fourth inch above the incision on the buccal and labial of the ridge, the anterior palatine foramen, and midway between the apex of the bicuspid roots and the crest of the ridge on the lingual side of the ridge.

2. *Removal of Flabby Tissue*—The incision is made with the electrode (Fig. 1, A), 2 mm. away from the crest of the bone. Cutting is done from the labial and buccal through to the lingual. While the tissue is being severed, grasp the loose end with a hemostat, holding it away from where it is being removed (Fig. 2). The electrode is moved against the tissue just as a seamstress draws a knife

(Continued on page 491)

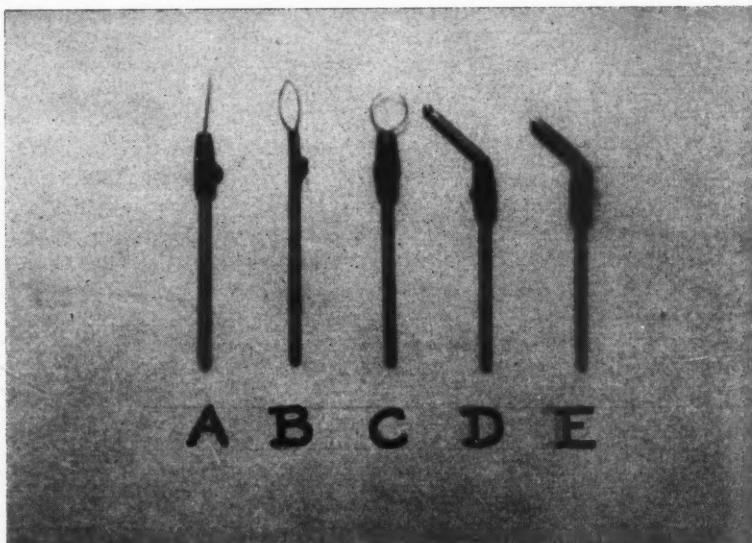


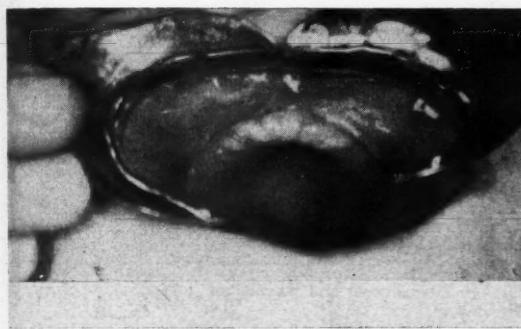
Fig. 1—A, Electrode used for incision; B, electrode used for incision, excision, or division of tissues; C, loop electrode used for planing rough edges of tissue; D, ball electrode used to stop bleeding by coagulation; E, electrode used for making incision for elimination of muscle attachments and frenum and raising or lowering mucobuccal and mucolabial folds.



Fig. 2—Demonstration on model of how loose end of tissue is grasped with hemostat and held away from point of removal.



Fig. 3—Base of flabby ridge immediately after its removal. Seldom is suturing required.



Figs. 4 through 8—Case of a patient, aged 48, who had worn dentures for seven years.

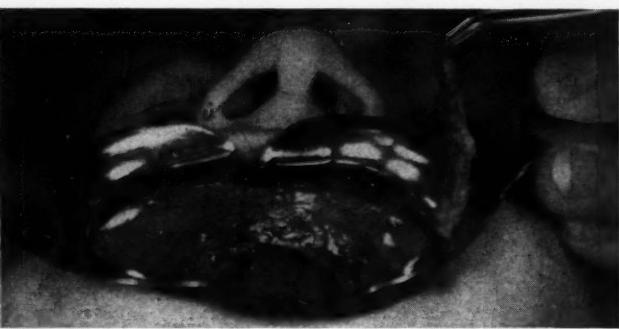
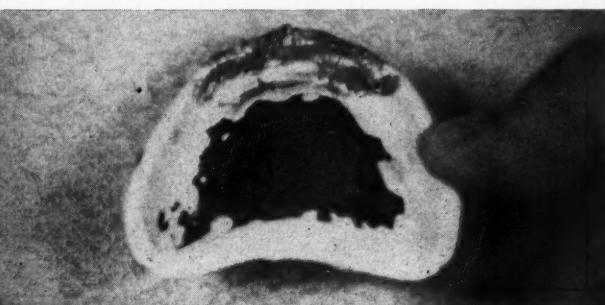


Fig. 4—Appearance of flabby ridge prior to operation.  
Fig. 5—Amount of tissue removed.



Fig. 6—Four sutures inserted.

Fig. 7—Old denture re-rimmed with compound and benzo-

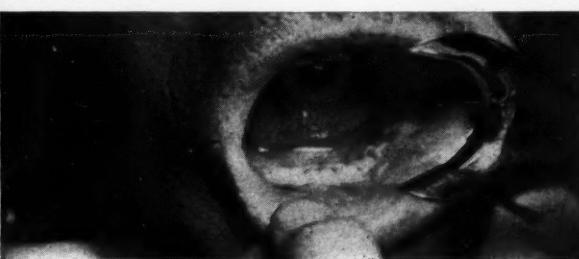


caine paste over the anterior portion of the denture to eliminate discomfort and to aid in healing.



Fig. 8—Same case, four weeks later; tissue healed.

Figs. 9 and 10—Lower jaw. Elimination of muscle attachments and lowering the muco-labial and muco-buccal fold to increase



stability and retention of the lower denture. Fig. 9: Before incision.

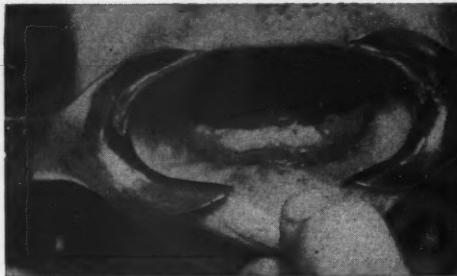


Fig. 10: After incision.

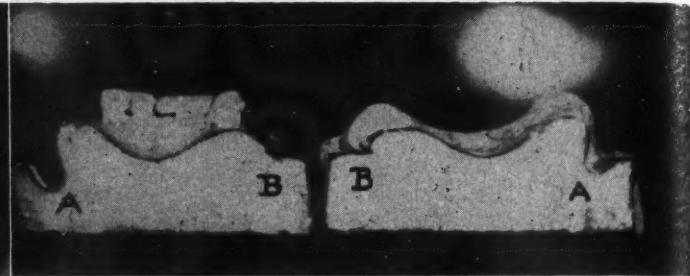


Fig. 11—A, Improvement of height of muco-buccal fold by incision.  
B, Low tissue attachment before incision.

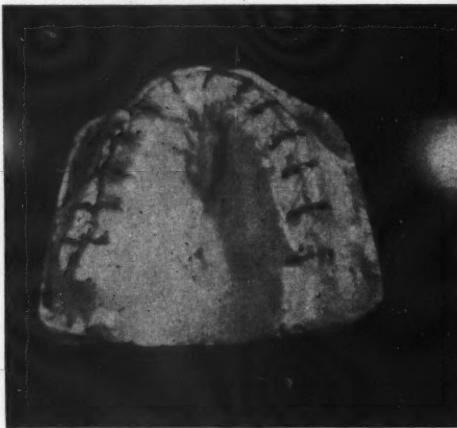


Fig. 12.—Method of suturing after reduction of entire crest and buccal and labial alveolar process; or, after reduction of either crest or process.



Fig. 13—Incision through muco-buccal and muco-labial fold from tuberosity to tuberosity.

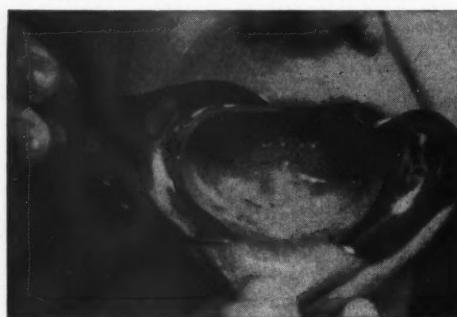


Fig. 14

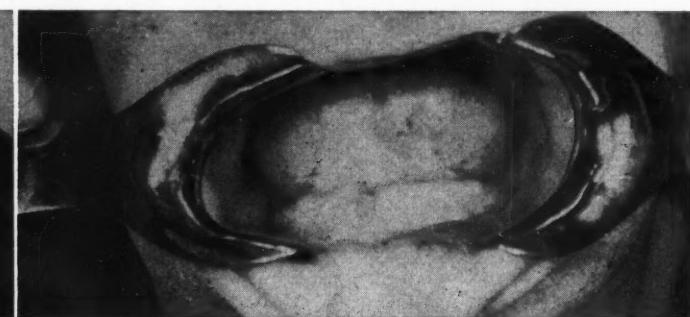


Fig. 15



Fig. 16

Figs. 14, 15, 16 and 17—Operations or incisions are contraindicated as there is nothing with which to make an improvement. In these and similar cases the labial,



Fig. 17

buccal, and lingual tissues are continuous. These cases, however, are by no means hopeless; patients can wear full dentures remarkably well.

across the stitches when ripping a seam in a piece of cloth.

3. After the bulk of the flabby ridge has been removed, the remaining rough edges of the tissue are planed off smoothly with the loop electrode (Fig. 1, C). Inasmuch as the ends of the vessels are coagulated as they are severed, hemorrhage is controlled and infection is minimized. Should bleeding develop, it can be stopped immediately by coagulation with the ball electrode (Fig. 1, D).

4. The old denture is re-rimmed with white compound. The excess is removed and the compound is sealed to the denture with denturlyne. The part of the denture covering the severed area is coated with benzocaine paste or foille emulsion and

inserted. This rebased denture is worn comfortably while the tissue is healing and the new dentures are being made.

5. The lower ridge is treated in the same manner as the upper ridge.

6. *Elimination of Muscle Attachments and Frenum; Raising or Lowering Muco-Labial and Muco-Buccal Folds*—For these incisions the anesthetic is placed in the height of the folds toward the alveolar process. Electrode E, shown in Fig. 1, is used for making the incision by holding and moving the blade parallel with the labial and buccal alveolar plate. This electrode is heavier than the others and consequently requires more current. The blade is 2.5 mm. wide, so that it will come in contact

with more tissue and thereby coagulate all the vessels as they are being severed. There will be almost no hemorrhage when cutting this loose tissue.

7. When the fold is raised or lowered and the patient does not have a denture, it is advisable to re-rim a shellac or acrylic baseplate and insert it immediately. This will absolutely prevent any reunion of the severed tissue. These incisions need not be made until just prior to the insertion of the dentures.

After the tissue has healed, about one-fourth the dentures will require re-rimming within three or four months. The others will be comfortable for an indefinite period.

*Poplar Street.*

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No DENTAL author can ever be paid for a valuable technical or scientific article. The value of such material is above a monetary basis. In the preparation of a technical article, however, an author often expends money for drawings, photographs, models, or graphs. We would like to help defray some of these expenses.

Until further notice, THE DENTAL DIGEST will allow \$25.00 toward the cost of illustrations provided by the author of every article accepted.

Before the year is out about 20,000 of our dental colleagues will be in military service. Few of them will have the time, the facilities, or the opportunities to develop new techniques or to write for the dental literature. They will be eager, however, to read of the new developments in dental science and art.

Writing articles for publication in technical journals can be a contribution to the war effort, because that is how to help our dental officers in the

Army and Navy keep abreast of technical advancements, and it is one way to improve the skill and services of civilian dentists on the home front.

If you have a constructive idea, an innovation, a new result of tried and proved experiment, put it down in writing, illustrate it, and send the material to: The Editor of THE DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

*We hope that you will accept this invitation!*

## Prognosis After Coronary Occlusion with Pulpless Teeth

[From Queries and Minor Notes, J.A.M.A. 122:1216 (August 21) 1943.]

"A man, aged 40, had a nearly fatal anterior coronary occlusion in December. Since that time, he has been making as much recovery as we think could be expected and with the exception of occasional pain and some limitation is going about his business. Some years ago, three Caldwell-Luc operations were performed on his right antrum. Since that time he has had a sensory disturbance of his right upper lip and the right lower part of his nose. The internist who took care of the patient during his cardiac difficulty advised that all foci be checked and removed. Two upper teeth on the right side of his head, bicuspid and first molar, have never given any known trouble and are perfectly sound to inspection and to x-ray examination but will not give any response to vitality tests. The question which the dentist, internist, and I do not feel com-

petent to answer is this: Should these two teeth be extracted or should they be left in place? The patient, while perfectly willing to cooperate, is not anxious to have the teeth extracted unless there is very good reason for it, since their loss would require replacement by dentures in order to leave enough teeth for chewing. How good would you judge the patient's prognosis for life? The electrocardiogram following the attack showed definite changes in the chest leads. The limb leads showed no changes for several weeks and then showed a decreased amplitude of the R wave in the first lead and coving and inversion of the T waves in all leads. Since that time the limb leads have appeared normal except for some decreased amplitude. There never was any appreciable disturbance in the take-off of the ST segment in the limb leads. There was

considerable such disturbance in the chest leads."

"ANSWER.—Despite the fact that some residual angina pectoris is suggested by the statement in the second sentence of the query and the necessarily guarded prognosis in any case of coronary heart disease, it is possible that this man may feel perfectly well after a few more months and live for a good many years if his heart is not appreciably enlarged and if he has the usual luck and takes reasonable care of himself. His age is in his favor. The electrocardiogram, although of some importance, should not be the preponderant factor in prognosis. It is not apparent that there exists the necessity to have teeth removed for the sake either of his heart or of his face, simply because the teeth are devitalized, though the heart would probably stand the operative procedure."

# Duplicating Lower Denture Adaptation

EMMETT BECKLEY, D.D.S., St. Joseph, Missouri

## DIGEST

A simple procedure is described for controlling the expansion of acrylic, allowing the flask to close when contraction takes place, and duplicating the same adaptation in the finished lower denture as was had in the original impression.

A PIECE of quarter inch carding wax, cut from 3 mm. to 5 mm. small-

er than the space existing between the lingual flange on the impression is the only additional requirement in the usual boxing technique.

## Technique

1. The additional piece of carding wax is placed on top of whatever type of material is used to fill the lingual space.
2. A hot spatula is applied to the carding wax in about three places.
3. The boxing material used to

complete the boxing is either a lead strip, wax, or wax-impregnated cotton tape.

4. The impression is poured in stone, allowed to set, and then separated.

5. Difficulty will be encountered if care is not taken to shape and control this flange as in preparing a class I inlay. A laboratory knife is used for this trimming. All the edges must be smooth, so that no undercuts will hinder the separation of the two halves.



Fig. 1—Impression boxed with carding wax flange and wax sides.



Fig. 2—Heavy carding wax added slightly smaller than the lingual space already filled, about 5 mm. smaller to be exact. Tacked down in several places with a hot wax spatula.

Fig. 3—Impression poured in stone and cast separated showing offset made by the additional heavy carding wax.



Fig. 3—Impression poured in stone and cast separated showing offset made by the additional heavy carding wax.



Fig. 4—Height of case in flask to complete the locking flange.

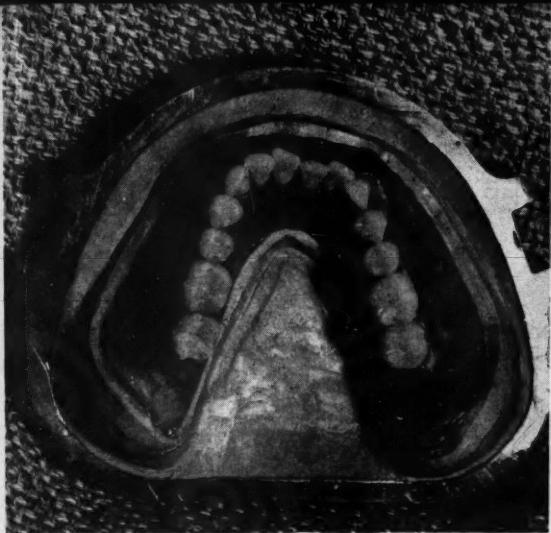


Fig. 5—Waxed case invested in stone in lower half of bronze flask. Note continuous locking flange around whole lower case.



Fig. 6—Case has been boiled out and the waste gates to receive the excess have been cut at the bottom of the locking flange—about 3 mm. in width and several millimeters deep.

6. The operator's usual denture procedure is used to bring the case to completion.

7. In flasking the final waxed case, the cast is positioned 3 mm. above the edge of the flask (Fig. 4). In so doing, the locking device has been developed completely around the whole lower impression.

8. The case is tin-foiled; a foil substitute may be used.

9. The flasking is completed in the usual manner, allowed to set, and then boiled out.

10. As a suggestion, Boraxo and liquid soap are used for the final cleaning.

11. The second part of this procedure is the cutting of the waste gate completely around the lower half of the flask on the lingual bottom portion of the impression (Fig. 6). The reason for this space is to prevent any excess material from hindering the final closing of the two halves of the flask.

12. The regular procedure is followed for packing the acrylic gel or powder and liquid. Four .005 shims are equally spaced between the two halves of the flask and pressure is applied to complete the packing.

13. In the final closing, the packing procedure is repeated, the four shims are replaced, and the flask is placed in the spring compress and allowed to set for fifteen minutes. This allows an equalization of pressure upon the acrylic material. The shims

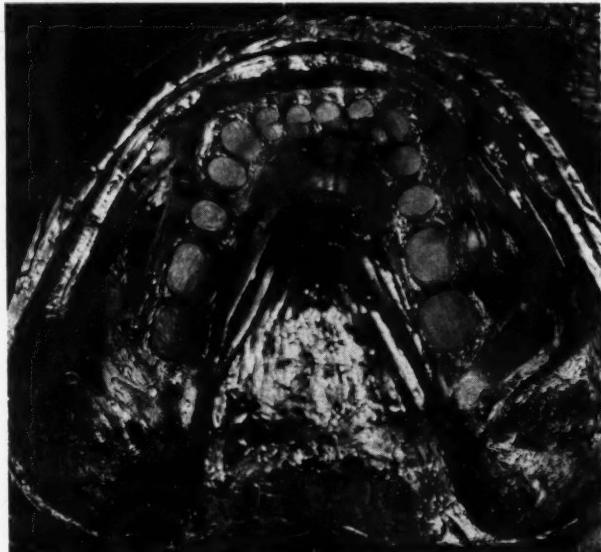


Fig. 7—Tin-foled side of case after having been boiled out. Locking flange is clearly outlined. Case is ready to receive acrylic. Only change from the usual procedure is that .005 brass shims are added at 4 points to keep flask from closing while being packed.

After the final trial pack the shims are left in place while standing in a spring compress for 30 minutes. Shims are removed and the case is cured in usual recommended slow-cure method.

are removed with a pair of pliers.

14. The curing procedure recommended by the manufacturers is followed. I prefer the slow cure—from three to five hours, depending on the size of the case, to bring the temperature to 160° F.; then allow one additional hour to bring the case to boiling.

15. The case is allowed to cool in the water bath overnight.

#### Comments

By allowing the expansion of the acrylic over the whole area, and then

allowing the contraction to take place in the same manner, no undue stresses or strains are injected into the finished denture.

The addition of this small piece of carding wax on top of the material used to fill the lingual space is a simple procedure as will be found when the operation is tried.

This procedure permits delivery of a lower denture having exceptional adaptation and stability.

## *The Editor's Page*

CERTAIN SIGNS portend all social upheavals. Politicians have learned to look to the "grass roots" and there listen for the rumblings among their constituents. Sociologists chart a pattern of group behavior by observing the phenomena among a selected sample. The gift of prescience is not given to many, but the use of observation is something we all can practice. Observing is more than recording with the senses. It has a large element of interpretation within its structure. Anyone interested in the phenomenon of group dental thinking is impressed with the springing up of nuclei of sentiment throughout the country with respect to another national dental organization after the war. A division or schisms developing within the American Dental Association are not desirable. The fact is, however, that many of the men in the service, by unsolicited, spontaneous expression, are recording themselves to their friends as being opposed to what they call the inaction on the part of the American Dental Association regarding support to the problems of dentists in military service. These dentists in service who are expressing themselves in terms of a dental organization after the war, made up of veterans, are disgruntled. Their disgruntlement comes from just causes. Those who are in the Reserves and called to active duty have felt that they were discriminated against and that their years of Reserve service did not count in their favor when commissions and assignments were given. Many of the men in practice for fifteen or twenty years have sacrificed a great deal to serve strenuously in the grade of First Lieutenant. Many of these men are in their early forties. They feel that the American Dental Association has not been aggressive enough in fighting their case before the War and Navy Departments and before the Congress.

It would be regrettable if another national dental organization sprang into being after the war. A division within the house is never satisfactory. Sometimes, however, rebellion is necessary. When nations or organizations grow too large, they frequently grow indifferent. When they grow indifferent some of their people begin to chafe. Usually this irritation does not develop beyond the stage of carpings and fault-finding. Some sentiments reach

so deeply into people's souls and so much zeal and indignation begin to develop that what was a sentiment of unrest develops into an action of unrest. The unrest among the dentists in military service is not some transitory, fleeting thing. It is deep-seated and it may portend dire effects in the future.

The politicians in the American Dental Association will not be guided by these warning signs. Cliques in power seldom do. The history of political parties in the United States give sufficient example. Parties and bosses grow powerful and begin to think of themselves as invincible. Then comes a day of turning when the vote of the people overthrows the existing rule. An organization of 8,000 or 10,000 ex-service dentists could be a force in American life which would have the ear of legislators, as veterans' blocs always have.

Turning outside politics to organized labor, we may observe what happens when one powerful national association is divided. Mr. Lewis felt that the attitude of Mr. Green and the American Federation of Labor was reactionary. Many laboring men agreed with Mr. Lewis and as a result the Congress of Industrial Organization was born. This more militant and aggressive organization had powerful influence for a time in the shaping of legislation favorable to labor and in extending trade unionism. The American Dental Association and its conservative attitude may be compared with the American Federation of Labor. So far no John L. Lewis has risen among the service dental officers to give expression to the underlying sentiment of disgruntlement. It is unlikely that one will rise until after the war. When he begins to speak and to review the record, he may expect converts and a ready following.

In many respects the American Dental Association has done a magnificent job during the war. The record of these accomplishments should be weighed against the indifference of the politicians to the problems of the dentists in service and those leaving service. It would be commendable to turn the politicians out and create a more liberal and effectual American Dental Association. It would be disastrous to destroy the organization.

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## Contra- Angles



### Ten Sensible Rules . . .

Ten rules to help prevent malpractice suits have been developed by the Allied Dental Council. These represent simplicity and good sense. Here they are:

- “1. Avoid arguments with patients who complain of grievances, real or fancied.
- “2. Keep complete and accurate records.
- “3. Refrain from guaranteeing or even promising a good result.
- “4. Follow approved methods of practice.
- “5. Be just as careful in your post-operative treatment as in the main operation.
- “6. When faced with an extraordinary situation, do not mark time, delay, or otherwise avoid the issue. You should face it squarely and if in doubt should call in a brother dentist for consultation, preferably a specialist in the particular type of treatment.
- “7. Never conceal any important fact from your patient, even where you may fancy the patient will never discover the error, mistake, or poor result.
- “8. When confronted by a serious question of law pertaining to dental practice you should seek the advice of your Insurance Committee.
- “9. Do not criticize another practitioner's work.
- “10. Avoid accidents in the handling of caustic medicaments, burs, and discs.—Allied Dental Council Insurance Committee.”

### Oslo Breakfast . . .

Fred Miller of Altoona, Pennsylvania, speaking before the Chicago Dental Society, mentioned the “Oslo breakfast.” In Norway the government has taken over the supervision

of the school children's breakfast as well as their education. Health officials found that too many children came to school without breakfast or having had one of poor quality. As a result, their school work suffered. If it is a function of government to educate its citizens, the Norwegians reason, then it is a function of government to see that citizens are healthy enough to absorb the education that is given to them. Good health will give citizens more stamina to earn, to contribute to the state, and to pay taxes. Good health decreases the appropriations by government for the maintenance of hospitals and asylums. A healthy citizen, therefore, is an asset to the government. He can produce more, produce longer, produce more efficiently; he is, therefore, a better potential taxpayer.

The thought is getting around in dental circles that a compulsory program of health care for children may be necessary if we are to control dental diseases. It is recognized in our own country that too many people start the day with a carbonated drink and a cigaret or coffee and a roll. They drag out in mid-morning. They are tired, listless, inattentive, indifferent and inefficient. They don't know it but they are suffering from hypoglycemia. Recently two physicians in examining the typical American breakfast decided that it was one relatively high in carbohydrate and low in fat. The mid-morning hypoglycemia is the result. Thorn and his associates (*Annals of Internal Medicine*, 18:913, June, 1943) would have us get away from the fruit juice-toast-cereal type of breakfast and substitute more protein foods. The hardy people who eat a breakfast steak or a slab of fish in the morning with a golden plate of eggs may never have heard of hypoglycemia but they do know that from this sort of breakfast they have a sense of well being which carries them over to the next meal.

### Army Surgeon General Speaks . . .

The American Dental Association was honored to have the Surgeon General of the Army, Major General

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Norman T. Kirk, appear before the War Service Committee in Cincinnati. General Kirk's address was broadcast on a national hookup over NBC Network. Here is what he said about the dental factors in global strategy:

"Today, without question, the

American soldier is the best equipped, fed and cared for individual in any Army in the world. If wounded, he has a better chance of surviving than ever before. If sick or ill, his chances of recovery are greater than ever before.

"Our troops are operating in tropical, temperate and arctic climates. Their weapons are the wonders of a mechanical age, but they are exposed to almost every disease known to mankind. At no time in the history of military medicine has so much had to be done in so short a time.

"General health and potentials for medical care are major considerations in every military operation. The efficiency and will to fight of an army rest primarily on the health of the individual soldier. In this respect, today, I would like to stress the importance of and the contributions of the dental officers in World War II.

"A soldier to be effective must be able to eat and digest the Army ration. Without a sufficient number of serviceable teeth, he is a casualty in the truest sense of the word. The records disclose that at the time of induction one out of every four men require emergency dental service. The primary mission of the Army Dental Corps, directed by Major General Robert H. Mills, is to prepare the incoming selectees dentally for field service. The secondary but equally important mission of the Dental Corps is to assist the Medical Corps in the care and evacuation of battle casualties and in their rehabilitation in our general hospitals at home. Duties of this character, particularly in combat zone where virtually no dentistry may be accomplished, consist of the emergency treatment of the wounded, supervising the collection of casualties and admissions to forward medical stations.

"The dental officers in the Army today serve with troops in every phase of combat, with ski troops and paratroopers, aboard hospital ships, ocean transports and at hospitals in all battle zones. In Sicily, physicians, dentists and medical aid soldiers jumped and landed with the first paratroopers. In Italy, they landed with the troops and are now functioning in the field with mobile surgical units and evacuation hospitals.

"In combat, a specially designed kit is given the dental officer and his assistant. The contents of these two

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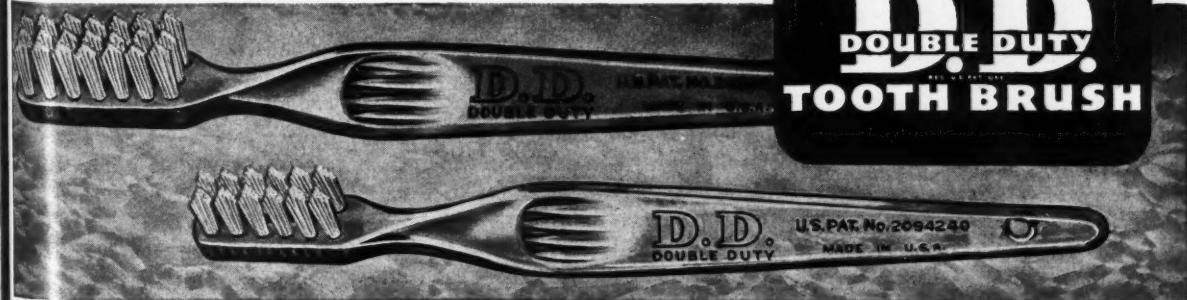
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"Dental officers also function as a vital part of maxillo-facial teams that are always on hand to provide preliminary treatment in advance of plastic surgery to be done at general hospitals at home.

"The profession of dentistry can justly be proud of these achievements. Since December 7, 1941, over 680,000 dentures have been made for the men in the armed forces. This means from a military point of view that approximately 450,000 men or 34 divisions have been made available for overseas combat duty by the construction of dentures. These men otherwise could not have qualified. Over 22,000,000 fillings have been inserted in the mouths of soldiers, and this means additional thousands of men made available. Several million prophylactic and pyorrhea treatments have been given, and thousands of oral infections have been cleared.

"Stomatitis Vincent's or trench mouth was one of the common diseases among troops of the last World War. The incidence of this infection has been remarkably low in this war, being 3.1 per 1,000 soldiers per month in this country, and 2.3 per thousand for overseas. Better oral hygiene and an excellent nutritional program probably account for this low incidence to date.

"On the basis of this record, our soldiers receive the very best dental treatment and services the dental profession has to offer. Many of them had their first dental care in the Army. The results are translatable in terms of fighting efficiency.

"In this war the respective units of the Medical Department accompany every invasion force, not 24 or 48 hours later, but at the same time. First aid stations are ready for service when the first casualties or sick appear. Every effort is made to be as

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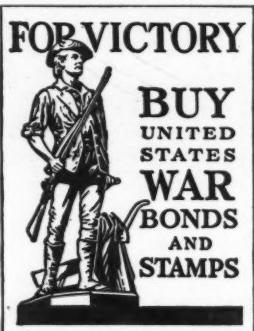
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near the center of casualties as possible, and aid stations move forward as the troops advance. Medical units function throughout the battle and many hours thereafter caring for the wounded. Surgical operations are performed in tents and improvised shelter areas within a short distance from the front lines.

"Blood plasma, the sulfa drugs, more adequate supplies plus the presence of the physician, dentist, and nurse in the forward areas have been flown back by air evacuation units for definitive treatment at station or general hospitals.

"Military medicine cannot function on an hourly basis. When our troops are engaged in combat there is imperative need of a large number of physicians and dentists to take care of casualties promptly. Each combat unit must have its own doctors who have been trained with it and who go into combat with it.

"Although the civilian dentists are well qualified professionally, Army Regulations, routine, records and reports vary considerably from the average practice. Courses have been designed to help orient many officers who have had little if any military experience, and to date approximately 2,000 dental officers have graduated from the Medical Field Service School at Carlisle Barracks, Pennsylvania. Courses in oral and maxillo-facial surgery are given to many dentists at the Army Medical Center in Washington, D. C., and certain civilian institutions. Several hundred technicians have also received training in dental laboratory procedures.

"The record of the Army Dental Corps speaks for itself. There is still much to be accomplished before victory can be claimed. The Army will continue to need more dentists, as well as physicians and nurses from civilian life. This means that the civilian medical and dental requirements will have to be reduced to the minimum by utilizing every opportunity to practice good health measures. This, I am sure, the American people at home are ready to do. 'Luxury' medical, dental, and nursing services are out for the duration.

"At the start of the war, there were 70,000 dentists in civilian practice. Today, there are nearly 14,000 dental officers in the Army. There are 40,000 medical officers in the Army and each officer is doing the work of four doctors in World War I. In short, there are fewer doctors now, proportionately, than there were in the Army during World War I. But, our armed services are now faced with the most complex problems of health protection in the military history of the world. Our forces encircle the globe. Their needs are our greatest concern. The American soldier has had and will continue to receive the best medical care and treatment. In realistic terms this means that a far greater percentage of our battle-wounded will return home safely than ever before. To date the mortality rate after treatment has totaled less than 2.5 per cent. The recovery rate for American troops, 97.5 per cent, is the highest in history, and adequately reflects the courage and performance beyond the call to duty which made it possible."

#### **Another Surgeon General . . .**

It is the year 1910. The month is May. The Surgeon General of that day, George H. Torney, spoke as follows with respect to commissioning dentists as officers in the Army:

"Let us compare for a minute the professional and administrative responsibility of dental surgeons with those of the medical officers.

"The medical officer from his entry into the service has to face the responsibility that upon his accuracy of diagnosis, promptness of action or professional skill may depend the tremendous issues of life and death. He never knows when nor how suddenly may come the hour which will test to the uttermost his courage, knowledge and professional skill. The careers as well as the health and lives of all the army come under the professional judgment of the medical officers who must approve them for admission to the service and for their promotion as officers, and for their physical fitness to continue in the exercise of command. As regards administrative responsibility, the medical officer

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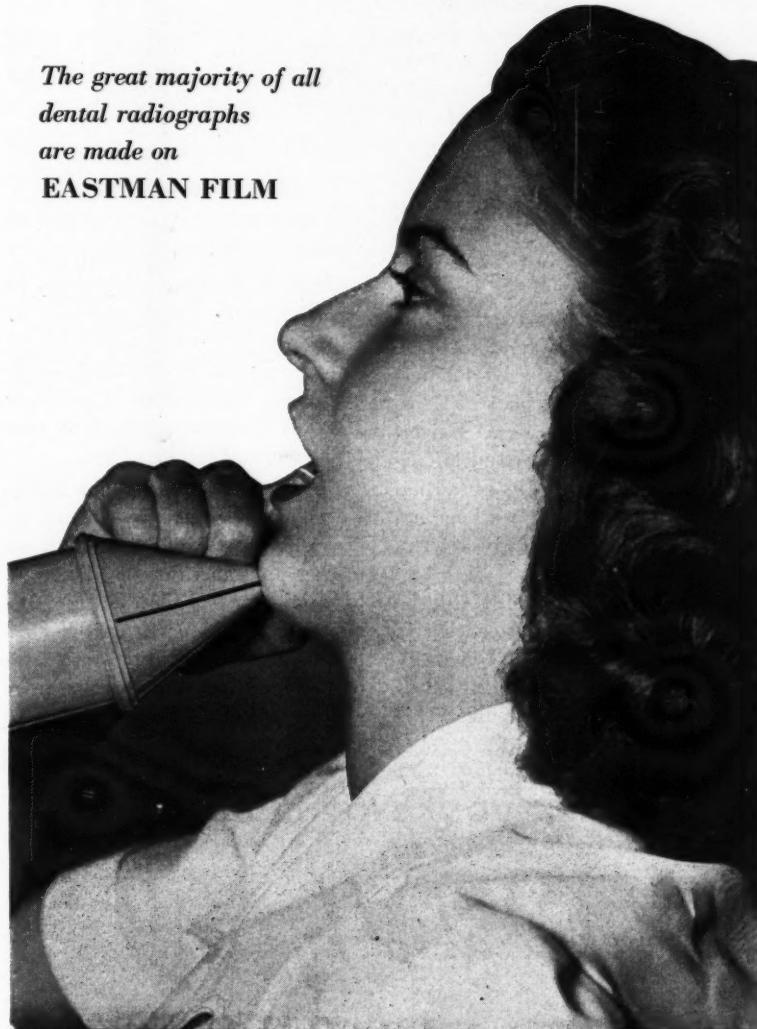
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**In your ORAL HYGIENE this month**

*This month, Oral Hygiene embarks  
on a new editorial project . . .*

## **THE ORAL HYGIENE DENTAL OPINION POLL**

UNDER THE sponsorship of the Northwestern University School of Journalism a quarterly poll of dental opinion will be conducted by ORAL HYGIENE. Every three months a question of current professional interest will be submitted to readers of the magazine. The results of these opinion studies will be published. The first ballot appears in this month's issue and results of the balloting will be reported in February. Subsequent ballots will appear in the February, May, August, and November, 1944 issues.

To insure scientific accuracy and validity the mechanism of the polling will be supervised by the faculty of the Medill School of Journalism of Northwestern University. The actual samples and tabulations will be made by Miss Rosa Hugger, a graduate student working under a fellowship provided by ORAL HYGIENE.

Questions to be studied will be determined by Dean Kenneth E. Olson of Northwestern University and his staff with the cooperation of a Dental Advisory Committee. This

Advisory Committee is composed of:

Guy S. Millberry, D.D.S., former dean, University of California College of Dentistry, San Francisco, Chairman.

Marcus L. Ward, D.D.S., past-president, American Dental Association, and former dean, University of Michigan School of Dentistry, Ann Arbor.

Frederick B. Noyes, D.D.S., Sc.D., former dean, University of Illinois College of Dentistry, Chicago.

Ralph R. Byrnes, D.D.S., dean, Atlanta-Southern Dental School, Atlanta.

John W. Cooke, D.M.D., former chairman, Curriculum Committee, Harvard University School of Dental Medicine, Boston.

The results of these opinion studies will be made available to dental society officers to aid them in formulating programs for the betterment of dentistry. A ballot for the first quarterly poll is carried in November ORAL HYGIENE in the form of a postage-free card. Every dentist is invited to participate.

commanding a base hospital has absolute professional and military control over 500 helpless sick, 200 attendants, 20 medical officers and an administrative staff. It is his responsibility to procure them food, clothing, pay and medicines and all other necessities. Upon his administrative ability directly depends the successful administration of this great organization and the comfort of its inmates. To successfully meet these responsibilities requires special training and long experience. To compare with these the professional responsibilities of an aching molar, the administrative supervision of a dentist's chair, and the military command of a single assistant, brings the discussion to an inevitable *reductio ad absurdum*.

"Nor is it much less so to bring into comparison the vast and ever widening field of medical learning and research with the elementary medical course which is the educational basis of the mechanic art of dental surgery. If these claims should be taken seriously and the examination in anatomy, physiology, histology and therapeutics made the same for candidates for appointment as dental surgeons and for medical officers, it is to be feared that very few qualified dental surgeons would be found. It is only necessary to make a comparison of the examination papers of the two classes of candidates to make this evident. The newly commissioned physician, however accomplished he may be in his profession, has to learn the administrative methods of the service and the special requirements of military sanitation before he can become an efficient medical officer. The dental surgeon, however, as soon as he has learned how to prepare his reports and draw his pay, becomes at once as efficient as any other dental surgeon of equal professional skill, whatever his length of service. Moreover, the official relations of the dental surgeons are with individuals only: they have neither command of organizations nor dealings with them, while in their dealing with enlisted men they are, as we have seen above, entitled to the same protection in their positions and

*In your November*

*Oral Hygiene*

the same respect and obedience as commissioned officers.

"It seems evident, therefore, that the reasons why commissioned rank in its several grades is necessary for the administration of the great and complex organization of the medical service do not apply to dental surgeons, and that commissioned rank is not, therefore, essential to the performance of their duties. Still less reason is there for the possession of the higher grades, since the dental service of the Army is without either complexity of organization or serious administrative responsibilities. An additional reason why any grade above that of First Lieutenant should not be given is that it would place the dental surgeons above the officers of the Medical Reserve Corps, with the result that the latter would become discontented and the medical service at posts where they are stationed would be disturbed. It is to be feared also that the elevation in rank of dental surgeons above the Medical Reserve Corps might not meet the approval of many distinguished physicians who have entered that corps and to whose sympathetic interest and assistance the Surgeon General looks to secure well qualified men for the vacancies in the Medical Corps. . . . While these reasons militate against the conferring on dental surgeons of any higher grade rank than First Lieutenant, they do not prevent the giving of that grade."

Compare the two speeches given thirty-three years apart. Now we are restless and striving for more recognition in our restiveness. It should be well to recall that we have come a long way from the attitude expressed by Surgeon General Torney in 1910 when he recommended that commissions as First Lieutenants be given to dentists begrudgingly. Now we have a Major General at the head of the Dental Corps with 14,000 officers serving under him. We have gone a long way, because we fought for it. Nothing was ever given to the dental profession gratuitously by the federal government, state governments, or the medical profession. It might be well for us all to recall the words of an uniden-

"now I get  
Better  
Impressions

with...

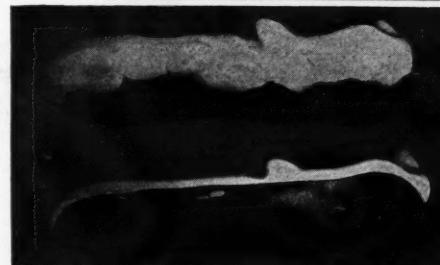


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**STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS, OF AUGUST 24, 1912.**  
of The Dental Digest, published monthly at Pittsburgh, Pa., for October 1, 1943.  
State of Pennsylvania,  
County of Allegheny,

ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared M. B. Massol, who, having been duly sworn according to law, deposes and says that he is the Publisher of The Dental Digest, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption required by the Act of August 24, 1912, embodied in Section 411, Postal Laws and Regulations, printed on the reverse side of this form, to wit:

1. That the names and addresses of the publisher and editor, are: Editor, E. J. Ryan, B.S., D.D.S., 708 Church Street, Evanston, Ill.; Publisher, M. B. Massol, 1005 Liberty Ave., Pittsburgh, Pa.

2. That the owners are: Dental Digest, Inc., 1005 Liberty Ave., Pittsburgh, Pa.; M. B. Massol, 1005 Liberty Ave., Pittsburgh, Pa.; Louis A. Smith, Hotel Schenley, Pittsburgh, Pa.; Lynn A. Smith, 10 Robin Road, Pittsburgh, Pa.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of stockholders, security holders, and other securities are: None.

The affiant certifies that the information contained in this affidavit is true and accurate to the best of his knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stocks, bonds, or other securities than as so stated by him.

(Signed) M. B. MASSOL,  
Publisher.

Sworn to and subscribed before me this 22nd day of September, 1943.

(Seal) E. G. Burgdorf, Notary Public.  
(My commission expires May 16, 1944.)

tified First Lieutenant (DC) who, writing in October, 1943, said:

"I have always been very jealous of my profession and for it and have always felt that we should not bend the knee before medicine. Rather let us walk side by side as befits equals. And unless we fight for that right and respect, we will not be deserving of it." This is the spirit that has advanced dentistry in the last one hundred years. It is the spirit that must prevail.—E.J.R.

### Sudden Death and Anesthesia— Fundamentals of Anesthesia

(Continued from page 484)

toward anesthesia, and the quantity of other drugs needed (ether, for example) is reduced. The time of its maximum depressant effect on respiration is roughly ninety minutes after hypodermic administration. Hence it is rarely given within one hour of induction of inhalation anesthesia, so that depression of ether may not be superimposed on an unexpected depression from the opiate. However, respiratory depression from the morphine may decrease respiratory exchange sufficiently to make saturation of the patient with ether difficult.

"6. Death from acapnia is likely only if respiration ceases in the presence of hypoxia and artificial respiration is not instituted.

"7. Cheyne-Stokes respiration during ether anesthesia is usually due to hypoxia following respiratory depression or obstruction, usually the latter.

"8. Similar accidents have been observed and recorded. They have often been considered the result of long continued obstruction to respiration and an inadequate supply of oxygen. The sudden relief of obstruction without adequate excess oxygen in the atmosphere and in the presence of drug depression of the respiratory centers results in a complicated physiologic condition which may be fatal.

"9. The use of an atmosphere rich in oxygen might have been very useful in this case. It seems justifiable to believe that the use of oxygen, of artificial respiration during the apneic periods, and the establishment of free exchange by means of an artificial airway might have changed the outcome. Whether carbon dioxide would be of added value is a debatable point.

"10. It is probable that neither lobeline, nikethamide nor any other stimulant would have had a beneficial result. Many anesthetists prefer artificial respiration to stimulating drugs because it is efficient and instantly available.

"11. During crying, deep breaths alternate with breath holding. Irregularity of dosage results. Anesthetic drugs are administered to crying children without accidents. It is perhaps cruel but not "dangerous" if proper safeguards are taken. To avoid the necessity of doing so, many anesthetists administer to children sedative drugs preoperatively in rather large doses.

"12. Some anesthetists consider it advisable to administer non-volatile drugs to children before tonsillectomy. Others do not. Factors other than age and weight must

The advertisement features a central graphic of a dental handpiece and a dental mirror. A circular banner around the handpiece reads "FOR HIGH FIDELITY CASTING". To the left of the handpiece is a "Jelenko No. 7" casting mold. To the right are three smaller sections: "CAST GOLD" (1-Piece and Unit Castings, Gold Color—per dwt. \$2.00, Melting Range 1582°-1726° F.), "Special INLAY" (Type A—Soft Simple Inlays, Gold Color—per dwt. \$2.00, Melting Range 1570°-1700° F.), and "MOD. MODULAY" (Type B—Med. Hard M.O.D. Inlays, Gold Color—per dwt. \$1.82, Melting Range 1536°-1764° F.). Below these is a section for "Durocast" (Type C—Hard Abutment Crowns and Inlays, Gold Color—per dwt. \$2.11, Melting Range 1627°-1753° F.). At the bottom right is a circular seal reading "SCIENTIFICALLY SAFE FOR DENTAL USE", "J.F. Jelenko & CO. INC.", and "GOLDS & SPECIALS FOR STRUCTURAL USE".

influence the dosage of depressant drugs administered to children.

"13. It cannot be said that morphine is "safer" than one of the derivatives of barbituric acid. One ought to be familiar with the pharmacologic effects of the drugs which one uses and choose drugs and doses which will produce effects desirable in the patient to whom they are administered.

"14. Since acapnia results from excessive elimination of carbon dioxide (hyperpnea), administration of this gas should overcome the acapnia. However, rarely during inhalation anesthesia does excessive elimination of carbon dioxide occur. On the other hand, an accumulation of carbon dioxide in the blood and body tissues during anesthesia is

almost impossible to prevent because depression and obstruction of respiration are so frequently present."

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#### DENTAL MEETING

## Dates

The Florida State Board of Dental Examiners, annual meeting, Seminole

Hotel, Jacksonville, November 29 through December 2. For information write to Doctor L. D. Pankey, Secretary, 138 Alhambra Circle, Coral Gables.

Ohio State Board of Dental Examiners, regular meeting, Western Reserve School of Dentistry, Cleveland,

October 18-20; and at the Ohio State University College of Dentistry, Columbus, November 29-December 1. For information write to Doctor Earl D. Lowry, Secretary, 79 East State Street, Columbus.

•  
Greater New York Meeting, Hotel Pennsylvania, New York City, December 6-10.

•  
Massachusetts State Board of Dental Examiners, regular meeting, December 27-29. For information write to Doctor William H. Canavan, Secretary, State House, Boston.

•  
Rhode Island Dental Society, annual meeting, Providence, January, 1944.

•  
Virginia State Board of Dental Examiners, regular meeting, Medical College of Virginia, Richmond, January 4. For information write to Doctor John M. Hughes, Secretary, 715 Medical Arts Building, Richmond.

•  
California State Board of Dental Examiners, regular meeting, Los Angeles, November 29; in San Francisco, January 10. For information write to Doctor Kenneth I. Nesbitt, Secretary, 515 Van Ness Avenue, San Francisco.

•  
Rocky Mountain Mid-Winter Meeting, thirty-seventh annual meeting, Cosmopolitan Hotel, Denver, Colorado, January 9-12.

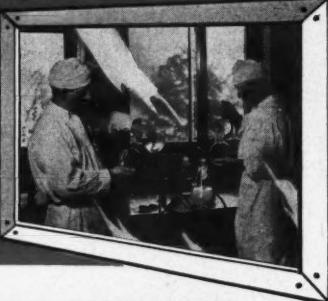
•  
Chicago Dental Society, eightieth annual mid-winter meeting, Palmer House, Chicago, February 21-23.

•  
New Jersey State Board of Dental Examiners, regular meeting, Trenton, June 28-July 2. For information write to Doctor J. Frank Burke, 150 East State Street, Trenton.

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